

# CALL THE BALL

The Newsletter of the 130th Composite Flight

<http://www.mnwg.cap.gov/farmington>

JAN 2001

Editor: w0vne@arrl.net



## Wing Aviation Officers to meet at our location on the 30th:

From the Group 4 Commander - The Wing AEO has asked to meet with all unit AEO's, preferably in January. 130th Squadron (ex Farmington) volunteered to let us meet at their meeting place (FBO) at Air Lake airport. Lt. Hedin and I picked January 30 at 7:00 PM. He assured me that he only needs 1 to 2 hours so we won't be real

late. Please forward to your unit AEO for her/his information. If unit AEO is not available, unit commander or other aviation minded member can fill in. If a couple folks want to attend there should be room. I know weather can be a large factor but would appreciate some idea if your unit will be sending a rep. Hopefully there can be some shared rides (plane or auto) to keep expenses down. Let me know please! Regards, Rustan. *Editors note Since we are the hosts of this activity we will be working on our spit and polish so as to provide a good impression to the many aerospace chiefs sure to attend this meeting.*



## Everything we need to know, we can learn from Noah's Ark...

One: Don't miss the boat. Two: Remember that we are all in the same boat. Three: Plan ahead. It wasn't raining when Noah built the Ark. Four: Stay fit. When you're 600 years old, someone may ask you to do something really big. Five: Don't listen to critics; just get on with the job that needs to be done. Six: Build your future on high ground. Seven: For safety's sake, travel in pairs. Eight: Speed isn't always an advantage. The

snails were on board with the cheetahs. Nine: When you're stressed, float a while. Ten: Remember, the Ark was built by amateurs; the Titanic by professionals. Eleven: No matter the storm, when you are with God, there's always a rainbow waiting.

From MN Wing /CP

To all personnel MN Wing

The dates of the Minnesota Wing Encampment are 28 July to 5 Aug at Grand Forks Air Force Base. Cpt Steve Miller is the encampment commander.

MINNESOTA WING RAD 7 PRIORITY 090035z JANUARY 2001

FROM : MINNESOTA WING / CP

TO : ALL PERSONNEL MINNESOTA WING

The Jan 2001 edition of Cadet Program Today addresses changes to the Cadet Aerospace Education Program, a grace period for Free Cadet Uniform for any cadet joining after 1 Oct 2000 but not using the new CAPF 15 and changes to the CAPF 7 which is used to provide reimbursement for orientation flights, new form available 1 Feb 2001.

MINNESOTA WING RAD 5 ROUTINE 080025z JANUARY 2001  
FROM : MINNESOTA WING / CP

TO : ALL PERSONNEL MINNESOTA WING

Cadet Competition will be 3 Mar 2001. Registration Material will go out 8 Jan 01 to DCFC's. Rules are on Cadet Program webpage. Further information contact Lt. Col. Mike Moen 612 889 3779.

MINNESOTA WING RAD 2 ROUTINE 032330z JANUARY 2001  
FROM : MINNESOTA WING MESSAGE CENTER.

TO : ALL WING INFORMATION OFFICERS

There will be an information officer workshop on Saturday, 20 Jan 01, starting at 0800 hours, at the Minneapolis-St. Paul IAP Air Force Reserve Station. To register, please contact Capt. Shannon Bauer at slaw123@aol.com or 612-825-1254

MINNESOTA WING RAD 1 ROUTINE 022245Z JANUARY 2001

FROM : MINNESOTA WING MESSAGE CENTER

TO : ALL PERSONNEL MINNESOTA WING.

ALL REQUESTS FOR RAD'S SHOULD BE DIRECTED TO MESG. CNTRM NWGLCAP@JUNO.COM EFFECTIVE 03 JANUARY 2001.

## Getting away from it all

The Voyager 1 Spacecraft might reach the boundary region dividing the solar system and interstellar space sometime between early next year and the end of 2003. JPL officials said the pressure of the solar wind is counter balanced by pressure of the interstellar wind somewhere about 100 or more times farther from the sun than the Earth is to our star the sun.. Voyager 1, the farthest human-made object from Earth, was launched in 1977.

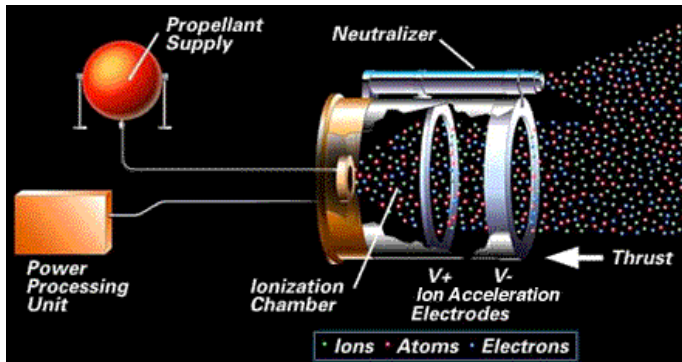


NASA/JPL/CALTECH

## A Faster and Cheaper way to get away from it all

NASA has been looking closely at solar-electric power as a means for future space propulsion. The JPL's Deep Space 1 spacecraft launched Oct 1998 is en route to a rendezvous with Comet Borely more than 200 million miles from Earth. Using ION drive Deep Space 1 will have used only 55 lb of its 181-lb supply of Xenon fuel. A standard chemical

propellant fueled spacecraft would require more than 900 lb. of fuel! Ion engines have none of the fiery thrust found in typical chemical fuel rocket motors. An ION Engine emits only an eerie blue glow as electrically charged atoms of Xenon. In ION Engines, each Xenon atom is stripped of an electron leaving an electrically charged particle called an ion. Those ions are then jolted by electricity that is produced by the spacecraft's solar panels. The jolt forces the ions to shoot out from the engine at high speeds producing thrust. Ion drive technology is already in use for station keeping purposes on board Hughes communications satellites and the OSCAR-40 Amateur Radio Communications satellite. The ionization chamber to which the power supply is connected is the site of particle acceleration. Propellant is pumped into the ionization chamber where it is passed between two grids that ionize it. The electrical field between the grids provides the positive ions of the propellant with an acceleration up to the velocity,  $v$ . Once ionized, the neutralizer, which is also connected to the power supply, fires electrons at the accelerated fuel particles. The purpose of these electrons is to counteract the positive charge of the particles, and to assure that the exhaust of the rocket is electrically neutral. The strength of the beam of electrons being fired at the exhaust depends on the amount of fuel being ionized and the thrust achieved. The relationship of the



mentioned variables with the rate of fuel consumption is given by the equation:

$$F = m \cdot v = (2W / v)$$

In this equation,

**F = thrust force**

**m = propellant consumption**

**v = exhaust velocity**

**W = beam power**

Another promising lightweight engine technology is Plasma propulsion. Astronaut Franklin Chang-Diaz, a six-time shuttle veteran, is pushing a plasma powered engine he believes can cut the 6 to 9 month travel time to Mars to three months. Called the Variable Specific Magnetoplasma Rocket, the engine uses three superconducting magnetic cells to ionize hydrogen atoms, amplify the heating process and then direct the outward flow of the resulting electrically charged gas. The advantage of VASIMR is its ability to throttle, allowing for an increase or decrease in thrust. The trick is in controlling plasma, the superhot gas that is found in extreme environments like those around stars. No solid is stable enough to contain plasma so the engine uses a superconductive magnetic field to direct the flow. Plans are to ready an engine for flight in 2004.

## Recycling taken to the max

Another ambitious project for future space exploration involves a closed loop life support system called the Bioregenerative Planetary Life Support System Test Complex or BIO-Plex.

Researchers hope to develop advanced technologies to recycle air, water and waste and allow humans to grow their own food in a closed environment - all capabilities that would be critical on a mission to Mars. BIO-Plex will consist of five large modules, each 15 ft in diameter and 37 ft. long. The habitation module contains a galley and wardroom for sleeping. A second module holds the research laboratory while a third contains life support equipment and filtration system. The final two modules are for plant production. Researchers expect to have 30 sq. meters of growing area per person on a sustained basis for a total of 120 sq. meters. There are 12 different crops. We'll look primarily at salad crops that the crew could eat as the crops matured. We'll be growing such things as lettuce, onions, tomatoes, sweet potatoes, soybeans, peanuts and rice. Four test subjects will take up residence inside BIO-Plex starting in late 2003 or early 2004 for a trial run of four months. Later runs will stretch to 8 months and then an 18 month run in 2009. Among the questions to be answered are how far can humans reduce their reliance on expendable items. How do various contaminants accumulate over time and what are the long term cleanliness issues? What are the key psychological or medical issues that arise among crews confined for long periods of time?

## Two Future holders of CAP Wings!

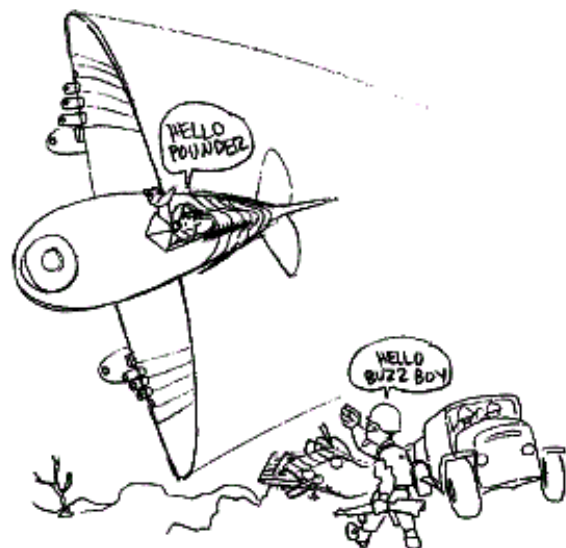
Congrats to Cadets Johnson and Haas who have been accepted to Flight academy powered and glider respectively. \*Note this is the first year for Glider Students and great new program for those under 16 years of age!

## New Patch!

Our new Unit Patch was accepted by Col. Hoium Wing Commander and are now on order. Thanks to everyone who helped in the design and selection.

## Comprehensive Ground Team training February to mid March.

For you ground pounders we will be working on our 101 qualifications with the stated goal of getting all members signed off with fresh new 101 cards. For those that have them this will be a chance to practice some dusty skills. Seniors will be also



To eliminate the need of a review board, cadets need to file the enclosed Special Activities Questionnaire to the best of their ability. Applications sent forward to National HQ on 31 Jan 2000 will be ranked by the grade earned on this questionnaire. Every line on the CAPF 31 must have an entry, even if it is "N/A". More information is in the CAP NEWS, November issue, and on the National website.

Complete the following questionnaire and submit a resume **including** the following information:

Name

Address

Rank

Highest CAP Award

Unit Charter

Activity applied for

Position in Squadron

Years attended Encampment as basic

Years attended Encampment as staff

Years attended other Integrated Leadership Program activities

Years served on unit Color Guard

Years served on Honor Guard

ES rating.

Send to Minnesota Wing HQ or the address above NLT 31 Dec 2000. Include with one CAPF 31 per activity being applied for. Do not forget to include a picture in uniform. Do not forget to rank the activities being applied for. Fill out the CAPF 31 completely, any item that are not applicable should be marked N/A. This process should be followed if applying for Minnesota Wing Flight Academy (deadline for Flight Academy applications 22 Jan 2001) (formerly Solo Encampment).

#### **THE CADET OATH :**

"I pledge that I will serve faithfully in the Civil Air Patrol Cadet Program ,  
and that I will attend meetings regularly, participate actively in unit activities,  
obey my officers, wear my uniform properly,  
and advance my education and training rapidly  
to prepare myself to be of service to my community, state, and nation."

#### **National Special Activities Questionnaire**

1. Explain how, in your daily life, you live the CAP Cadet Oath?

2. How have you lived the Core Value of "Volunteer Service" in your life?

3. You are just introduced to someone, and they ask you to talk about yourself, what do you say?

4. Describe an experience where you have used integrity in your life?

5. What talents will you share with fellow cadets at this activity?

6. What are the most important responsibilities leaders have to their followers?

7. What do you expect to gain from the activity, and how will it improve your unit? Answer all questions as completely as you can, write legibly, use extra paper, label answers.